

METHOD FOR DEPOSITING OXIDE AT ATOMIC LAYER LEVEL BY VAPOR GROWTH METHOD

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Abstract

PURPOSE: To grow an oxide thin film while controlling this thin film at an atomic layer level by adsorbing an org. metal complex to the OH group generated on a substrate then removing only the ligands by a prescribed operation to form the metal which is the central atom of the complex in the form of bonding this metal to the O atom of the OH group.

CONSTITUTION: The org. matter of the oxide substrate consisting of SiO₂, etc., is burned out by a method of exposing this substrate to an oxygen atmosphere generally kept at 460 to 500 deg.C and thereafter, the substrate is exposed to pure steam to form the surface having the surface OH group. The vapor of the metal complex [for example, dibipyryl metanate (DPM)] having the ligand which possesses the affinity to the above-mentioned OH group is introduced to cause chemical vapor deposition. The substrate adsorbed with the above-mentioned complex is then exposed to an atmosphere contg. H₂O. As a result, the structure in which only the ligand of the metal complex is removed and the central atom of the complex, i.e., the metal is bonded to the O, for example, Cu-O- structure is formed on the substrate.